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(71) Applicant (for all designated States except US): **QINETIQ LIMITED** [GB/GB]; Registered Office, 85 Buckingham Gate, London SW1E 6PD (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LUDLOW, Jeremy, Leonard, Clive** [—/GB]; QinetiQ Limited, Cody Technology Park, Building A7 Room G010, Ively Road, Farnborough, Hampshire GU14 0LX (GB). **MAYLIN,**

Mark, Gregory [GB/GB]; QinetiQ Limited, Cody Technology Park, Building A7 Room G059, Ively Road, Farnborough, Hampshire GU14 0LX (GB). **ROGERS, Michael, Clive** [GB/GB]; 9 Vespasian Gardens, Basingstoke, Hampshire RG24 9SN (GB).

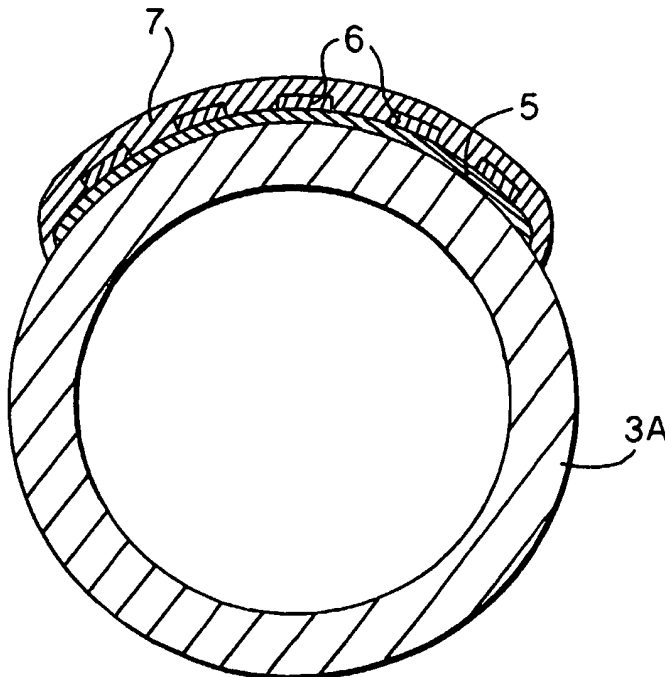
(74) Agent: **OBEE, Robert, W.**; IP QinetiQ Formalities, Cody Technology Park, A4 Building, Room G016, Ively Road, Farnborough, Hampshire GU14 0LX (GB).

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(54) Title: ELECTRICAL TRANSMISSION SYSTEM



(57) **Abstract:** A system for the transmission of electrical energy between different parts of an electrically conductive structure, and in particular for transmission of power and/or data signals to/from downhole equipment or instrumentation in oil and gas wells. A first layer of electrically insulative ceramic material (5) is deposited on the structure (e.g. oil pipe string 3A), followed by a series of electrically conductive tracks (6) and a second layer of electrically insulative ceramic material (7). The tracks (6) which serve for the transmission of power and/or data signals are thus sandwiched between the layers (5 and 7), insulated from the structure (3A) and the external environment and protected from damage. Each layer (5, 6 and 7) is deposited by a thermal spray process such as plasma spraying or high velocity oxy fuel spraying.

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